

The present invention relates to power control in communication devices such as cellular telephones, for example. Power amplifiers in such communications devices have typically been arranged so as to have a particular fixed gain. In such an arrangement, power control is achieved by reducing the amplitude of the input signal to the power amplifier, the output signal from the power amplifier, or both, using attenuators, for example. Such an approach results in poor efficiency—an important consideration for battery-powered devices.

A different approach, illustrated in Figure 1 of the specification, is to vary the gain of the power amplifier by varying the power supply to the power amplifier. Variation of the power supply may be accomplished using a high-efficiency switch-mode power supply, for example. Desired output power and the value of a control variable to be applied to the switch-mode power supply may not be linearly related. A lookup table may be used to readily represent a non-linear relationship between desired power and the control variable. That relationship may not be a simple function of the desired power only but may additionally be a function of, for example, temperature, output frequency, etc. Both temperature and frequency affect device gain.

The present invention relates in particular to varying, or controlling, power in accordance with output frequency, as set forth in independent claims 12, 16 and 20. Such control is not possible in the typical prior art arrangement described above.

Furthermore, such control is not taught or suggested by Endo. Endo, as reflected in the title, relates particularly to transmission power control using dynamic step values. That is, a mobile unit adjusts its transmission power in accordance with commands from a base station. However, instead of the mobile adjusting power up or down by a fixed predetermined amount upon receipt of a command, the mobile determines whether it is in a near, intermediate or far region and responds to commands from the base station using a step size based on which region it is in. This manner of operation is based on the recognition that, if a mobile in a near zone and a mobile in a far zone were received at the

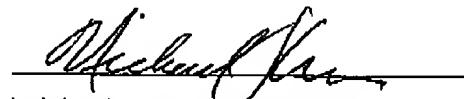
base station at equal strength, stepping the power of both by, say, 0.5dB would have a proportionally greater effect on the near mobile (which experiences less signal attenuation) and a proportionally lesser effect on the far mobile (which experiences greater attenuation). Logically, then, the far mobile should use a greater step size than the near mobile.

Nevertheless, Endo says nothing about controlling power in accordance with output frequency as in the present invention.

Accordingly, claims 12, 16 and 20 are believed to patentably define over Endo.

Dependent claims 13-15, 17-19 and 21-23 are also believed to add novel and patentable subject matter to their respective independent claims. Withdrawal of the rejection and allowance of claims 12-23 is respectfully requested.

Respectfully submitted,

  
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